

**REMARKS**

Claims 1-20 are pending in the application. Claims 1-7 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Claims 1, 2, 8, 9 and 15-17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,351,530 to Rahamim, in view of U.S. Patent Publication No. 2004/0153543 to Thomas. Claim 3-7, 10-14 and 18-20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Rahamim, in view of Thomas, and further in view of U.S. Patent No. 5,056,118 to Sun. These rejections are respectfully traversed.

In regards to the rejection under 35 USC 112, second paragraph, the Examiner states that claim 1 recites an AC signal that is modulated, then a load is modulated when said AC signal is not modulated, and asserts that the claim makes no sense. Applicants respectfully disagree. Claim 1 includes a ***method for conveying bidirectional data over a transformer*** comprising the steps of ***modulating an alternating current signal with outbound data***, driving a first side of the transformer with the modulated signal, receiving the modulated signal from a second side of the transformer, ***extracting outbound data from the received modulated signal using a comparator, modulating according to inbound data the load presented to the second side of the transformer when the alternating current signal is not modulated***, and receiving inbound data by sensing said load modulation. As can be seen from the emphasized portions, modulating an alternating current signal with outbound data occurs, then extracting outbound data from the received modulated signal using a comparator occurs, then modulating according to inbound data the load presented to the second side of the transformer when the alternating current signal is not modulated occurs. The Examiner has misstated the claim limitations in a way that makes no sense, but when the claim limitations as presented are properly considered, they comply with 35 USC 112, second paragraph. The Examiner also states that it is not clear how exactly the load is modulated. The claim does not place any restrictions how the load is modulated, and it can be modulated in any suitable manner, but several exemplary embodiments are disclosed in the specification at page 10, lines 4-10. It is assumed that claims 2-7 were rejected under 35 USC second paragraph only because they depend from claim 1. Accordingly, withdrawal of the rejection of claims 1-7 under 35 USC 112 second paragraph is respectfully requested.

In regards to the rejection of claims 1, 2, 8, 9 and 15-17 under 35 U.S.C. 103(a) as being unpatentable over Rahamim in view of Thomas, Rahamim in view of Thomas fails to provide a prima facie basis for the rejection of the claims as they fail to disclose each element of the claimed inventions. Consider claim 1, which includes a method for conveying bidirectional data over a transformer comprising the steps of modulating an alternating current signal with outbound data, driving a first side of the transformer with the modulated signal, receiving the modulated signal from a second side of the transformer, extracting outbound data from the received modulated signal using a comparator, modulating according to inbound data the load presented to the second side of the transformer when the alternating current signal is not modulated, and receiving inbound data by sensing said load modulation. Neither Rahamin nor Thomas disclose modulating according to inbound data the load presented to the second side of the transformer when the alternating current signal is not modulated, and the Examiner fails to identify any disclosure in either Rahamin or Thomas of modulating according to inbound data the load presented to the second side of the transformer when the alternating current signal is not modulated. In addition, the Examiner has failed to comply with 37 C.F.R. 1.104(c)(2), which states that in “rejecting claims for want of novelty or for obviousness, the examiner must cite the best references at his or her command. *When a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part relied on must be designated as nearly as practicable.* The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified.” Both Rahamin and Thomas are quite complex – Rahamin alone includes 14 Figures and 106 columns of specification. Numerous other method steps are also not disclosed in Rahamin or Thomas. Withdrawal of the rejection is respectfully requested.

Likewise, claim 8 includes an apparatus for conveying bidirectional data across a galvanic barrier comprising a signal generator, a signal modulator for modulating with outbound data a signal produced by the signal generator, a transformer having a first side for receiving a modulated signal from the signal modulator and a second side, a data extractor for extracting outbound data from a modulated signal received from the second side of the transformer, the data extractor further comprising a comparator, a transformer load modulator for modulating the load on the second side of the transformer according to inbound data and an inbound data recovery unit for determining inbound data by sensing load modulations induced by the transformer load modulator. Neither Rahamin or Thomas disclose a transformer load modulator, as well as numerous other elements.

Again, the lack of any identification of the particular part that is being relied on by the Examiner does not facilitate examination of the claims. Withdrawal of the rejection is respectfully requested.

Claim 2 includes the method of Claim 1 wherein modulating the alternating current signal with outbound data comprises switching the phase of an alternating current signal according to a serial bit stream coincident with a clock. The Examiner admits that neither reference discloses this limitation, but appears to rely on Official notice as a basis for rejecting claim 2, stating "it would have been obvious that any well known modulating scheme (such as frequency, amplitude or phase) could be used to perform the disclosed modulating step as a matter of design choice." However, Official notice unsupported by documentary evidence should only be taken by the examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well-known. As noted by the court in *In re Ahlert*, 424 F.2d 1088, 1091, 165 USPQ 418, 420 (CCPA 1970), the notice of facts beyond the record which may be taken by the examiner must be "capable of such instant and unquestionable demonstration as to defy dispute" (citing *In re Knapp Monarch Co.*, 296 F.2d 230, 132 USPQ 6 (CCPA 1961)). In that regard, the claimed modulating step is "modulating the alternating current signal with outbound data comprises switching the phase of an alternating current signal according to a serial bit stream coincident with a clock." As it would be impossible to use frequency or amplitude modulation to modulate the current signal with outbound data according to a serial bit stream coincident with a clock, the noticed fact cannot be considered to be common knowledge or well-known in the art. Furthermore, while Thomas does disclose frequency modulation, pulse-width modulation, Orthogonal Frequency Division Multiplexing (OFDM), quadrature modulation and Quadrature Amplitude Modulation (QAM), it fails to disclose that any of these forms of modulation are performed according to a serial bit stream coincident with a clock. Indeed, the term "clock" is not even used in Thomas. Withdrawal of the rejection is respectfully requested.

Claim 9 includes the apparatus of Claim 8 wherein the signal modulator comprises a phase modulator for altering the phase of the signal coincident with a clock. As discussed above, official notice is improper, and it is admitted by the Examiner that this element is not found in the prior art. Withdrawal of the rejection is respectfully requested.

Claim 15 includes a system-side isolation controller comprising a signal generator, a signal modulator for modulating a signal produced by the signal generator, the signal modulator comprising an exclusive OR gate and an exclusive NOR gate, and an inbound data recovery unit for determining

inbound data by sensing load modulations exhibited by a transformer. The Examiner only addresses modulation in regards to claim 15, which is acknowledged not to be disclosed by the prior art, but fails to also address “sensing load modulations exhibited by a transformer.” Neither Rahamin nor Thomas disclose sensing load modulations exhibited by a transformer. Furthermore, the claim includes “the signal modulator comprising an exclusive OR gate and an exclusive NOR gate,” and the Examiner states that “any well known logic devices such as exclusive OR and NOR gates could be used as a matter of design choice in order to set the clocking rate for the modulating/demodulating processes.” However, the claim does not state that the exclusive OR and NOR gates are used to set the clocking rate for the modulating/demodulating processes, so it is unclear what limitation the Examiner is referring to. Because the Examiner has lumped the rejection of three different claims into a single paragraph, it appears that the claim limitations of the different claims have been confused. Due to the lack of compliance with 37 C.F.R. 1.104(c)(2), it is impossible to determine what the Examiner believes satisfies the claim limitations, but at least two claim limitations are utterly missing from the cited art – one admitted by the Examiner, and a second that was not even addressed by the Examiner. Withdrawal of the rejection is respectfully requested.

In regards to claim 16, which includes the system-side isolation controller of Claim 15 further comprising a transformer driver for driving the transformer with the modulated signal, the Examiner states that “the device inherently comprises a driver in order to drive the signals across the transformer.” However, it is unclear what “device” the Examiner is referring to – a “device” of Rahamim, a “device” of Thomas, a “device” disclosed in the application, or some other “device?” However, it is not just any “device” that must inherently include a driver, it is the system-side isolation controller of Claim 15, and it must not inherently contain just “a driver,” but rather a “transformer driver.” The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). “To establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.’ ” *In re*

*Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted). As such, the Examiner’s inherency argument fails to meet these requirements, because the “device” that the examiner is referring to is not clear, and the Examiner fails to allege that a transformer driver for driving the transformer with the modulated signal would be inherent in the unidentified “device.” Withdrawal of the rejection is respectfully requested.

In regards to claim 17, which includes a line-side isolation controller comprising a data extractor for extracting outbound data from a modulated signal received from a second side of a transformer, the data extractor comprising a comparator, and a transformer load modulator for modulating the load presented to the second side of the transformer according to inbound data, the Examiner does provide at least *some* details to help decipher the grounds of rejection, citing to Fig. 1 and col. 4, lines 45-65 of Rahamin, and stating that “the line impedance (impedance presented to the transformer) may be made programmable via received data (digital values),” and that this “inherently requires a switchable impedance element across the transformer.” However, a “switchable impedance element across the transformer” is not what is claimed. What is claimed is a transformer load modulator for modulating the load presented to the second side of the transformer according to inbound data. Figs. 3D and 3E of Rahamin show how this is accomplished by Rahamin without transformer load modulator for modulating the load presented to the second side of the transformer according to inbound data – separate data/control/program path is provided that is independent of the clock/power path, which does not require a “switchable impedance element across the transformer” and which is not a transformer load modulator for modulating the load presented to the second side of the transformer according to inbound data. Instead, the inbound data is directly transmitted using a separate path. Rahamin actually has very little relevance to the claimed invention, as can be clearly seen once the specific parts of Rahamin that are being relied on are actually identified. Withdrawal of the rejection is respectfully requested.

Claim 3 includes the method of Claim 1 wherein extracting outbound data comprises extracting a clock signal from the received modulated signal and sampling the received modulated signal according to the extracted clock signal. The Examiner admits that neither Rahamin or Thomas disclose this, but asserts that it is disclosed by Sun, in Fig. 1 and the abstract. Sun discloses a digital network, and the clock and data recovery are used on the digital data being transmitted over the digital network. In contrast, claim 3 depends from claim 1, which includes a method for conveying bidirectional data over a transformer comprising the steps of: modulating an alternating

current signal with outbound data. Sun does not deal with data modulated on an alternating current signal, but rather with a digital network, where the only signals present are digital signals. As such, Sun cannot extract a clock signal from a received modulated alternating current signal and sample the received modulated alternating current signal according to the extracted clock signal. Withdrawal of the rejection is respectfully requested.

Claim 10 includes the apparatus of Claim 8 wherein the data extractor comprises a clock extractor for extracting a clock from a received modulated signal and a sampling device for sampling the received modulated signal according to the extracted clock. Claim 8 includes a signal generator and a signal modulator for modulating with outbound data a signal produced by the signal generator. As discussed above, Sun relates to a digital network, and does not include a clock extractor for extracting a clock from a received modulated signal from a signal generator and a sampling device for sampling the received modulated signal from a signal generator according to the extracted clock.. The clock and data signals of Sun are the transmitted digital clock and data signals, and not signals modulated on a signal generated by a signal generator. Withdrawal of the rejection is respectfully requested.

Claim 18 includes the line-side isolation controller of Claim 17 wherein the data extractor comprises a clock extractor for extracting a clock signal from a received modulated signal and a sampling device for sampling the received modulated signal according to the extracted clock signal. Again, Sun is extracting the clock signal from a digital data signal, not a modulated signal. Withdrawal of the rejection is respectfully requested.

Claim 4 includes the method of Claim 3 wherein extracting a clock signal comprises sensing transitions in the received modulated signal, generating an independent clock signal and synchronizing the independent clock with the transitions. Again, Sun discloses a digital network, and would be incapable of sensing transitions in a received modulated alternating current signal. An Alternating current signal would destroy the digital network of Sun. Withdrawal of the rejection is respectfully requested.

Claim 11 includes the apparatus of Claim 10 wherein the clock extractor comprises a controllable oscillator for generating a clock according to a control signal and the comparator is for generating the control signal by comparing transitions in a received modulated signal with transitions in the generated clock. Again, Sun, which pertains to a digital network receiving digitally-encoded data, does not process modulated signals. Withdrawal of the rejection is respectfully requested.

Claim 19 includes the line-side isolation controller of Claim 18 wherein the clock extractor comprises a controllable oscillator for generating a clock according to a control signal and the comparator is for generating the control signal by comparing transitions in a received modulated signal with transitions in the generated clock. Again, Sun, which pertains to a digital network receiving digitally-encoded data, does not process modulated signals. Withdrawal of the rejection is respectfully requested.

Claim 5 includes the method of Claim 1 wherein modulating the load presented to the second side of the transformer comprises varying the impedance presented to the transformer according to a serial data stream coincident with an extracted clock signal. The Examiner asserts that “any electrical signal present on the inputs to the transformer (such as an incoming clocked data signal or an outgoing analog signal) will vary the impedance presented to the transformer. However, that is not the claim limitation, which is modulating the load presented to the second side of the transformer comprises varying the impedance presented to the transformer **according to** a serial data stream coincident with an extracted clock signal. The Examiner re-writes the claim to read modulating the load presented to the second side of the transformer comprises varying the impedance presented to the transformer **according to by providing** a serial data stream coincident with an extracted clock signal **to the input of the transformer**. The Examiner’s proposed amended claim lacks support in the specification, and is therefore improper. Withdrawal of the rejection is respectfully requested.

Claim 6 includes the method of Claim 1 further comprising generating an analog signal according to the extracted outbound data signal and varying the impedance of a circuit load according to the analog signal. Again, the Examiner does not construe the claim language presented, and re-writes the claim in a manner that lacks any support in the specification. There are no disclosed embodiments where an incoming clocked data signal or an outgoing analog signal is provided to the terminals of the transformer to vary the impedance of a circuit load according to an analog signal generated according to the extracted outbound data signal. Withdrawal of the rejection is respectfully requested.

Claim 7 includes the method of Claim 1 wherein modulating the load presented to the second side of the transformer comprises generating a digital value according to the voltage across a circuit load coincident with an extracted clock signal and varying the impedance presented to the second side of the transformer according to the digital value. As discussed, Rahamin discloses an entirely different manner of transmitting data/control/program signals, namely, a separate transmission path,

which does not inherently require varying the impedance presented to the second side of the transformer according to the digital value. Withdrawal of the rejection is respectfully requested.

Claim 12 includes the apparatus of Claim 8 wherein the transformer load modulator comprises an impedance element, a synchronizer for synchronizing inbound data with an extracted clock signal and a switch for attaching the impedance element to the second side of the transformer according to the synchronized inbound data. None of the cited references disclose any of these limitations, and the Examiner does not even attempt to address these limitations. Withdrawal of the rejection is respectfully requested.

Claim 13 includes the apparatus of Claim 8 further comprising a digital-to-analog converter for capable of generating an analog signal according to extracted outbound data, a line circuit load for presenting a load to a communications channel, an impedance element and an analog gate for linearly imparting the impedance element across the line circuit load according to the analog signal. The Examiner states that the “system inherently comprises A/D and D/A converters for the purpose of sending and receiving the data/power,” but this is absurd. A/D and D/A converters are not used for sending and receiving power. Furthermore, this fails to address each claim element, and no assertion is made that the “system” (whatever “system” that is) also inherently includes a line circuit load for presenting a load to a communications channel, an impedance element and an analog gate for linearly imparting the impedance element across the line circuit load according to the analog signal. Again, the failure of the Examiner to comply with 37 C.F.R. 1.104(c)(2) and the improper reliance on inherency relating only to one of a number of claim elements fails to provide a prima facie basis for the rejection of claim 13. Withdrawal of the rejection is respectfully requested.

Claim 14 includes the apparatus of Claim 8 further comprising a line circuit load for presenting a load to a communications channel, an analog-to-digital converter for generating a digital value according the voltage present across the line circuit load, an impedance element and a switch for attaching the impedance element to the second side of the transformer according to the digital value. The Examiner states that the “system inherently comprises A/D and D/A converters for the purpose of sending and receiving the data/power,” but as noted, this is absurd, and also fails to address each claim element. No assertion is made that the “system” (whatever “system” that is) also inherently includes a line circuit load for presenting a load to a communications channel, an impedance element and a switch for attaching the impedance element to the second side of the transformer according to the digital value. Again, the failure of the Examiner to comply with 37

C.F.R. 1.104(c)(2) and the improper reliance on inherency relating only to one of a number of claim elements fails to provide a *prima facie* basis for the rejection of claim 14. Withdrawal of the rejection is respectfully requested.

Claim 20 includes the line-side isolation controller of Claim 17 further comprising a digital-to-analog converter for generating an analog signal according to extracted outbound data, an analog gate for linearly imparting a first impedance element across a line circuit load according to the analog signal, an analog-to-digital converter for generating a digital value according the voltage present across the line circuit load, an impedance element, and a switch for attaching a second impedance element the second side of the transformer according to the digital value. As with claims 13 and 14, the Examiner's cursory and incorrect assertion that the "system inherently comprises A/D and D/A converters for the purpose of sending and receiving the data/power" fails to address each of these elements and fails to provide a *prima facie* basis for the rejection of claim 20. Withdrawal of the rejection is respectfully requested.

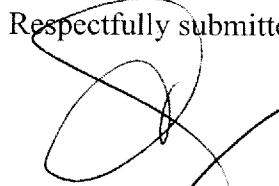
**CONCLUSION**

In view of the foregoing remarks and for various other reasons readily apparent, Applicants submit that all of the claims now present are allowable, and withdrawal of the rejection and a Notice of Allowance are courteously solicited.

If any impediment to the allowance of the claims remains after consideration of this amendment, a telephone interview with the Examiner is hereby requested by the undersigned at (214) 953-5990 so that such issues may be resolved as expeditiously as possible.

A Petition for 1-Month Extension of Time is enclosed. The Commissioner is authorized to charge the extension fee in the amount of \$130.00 to Deposit Account No. 10-0096. No additional fee is believed to be due. If any applicable fee or refund has been overlooked, the Commissioner is hereby authorized to charge any fee or credit any refund to the deposit account of Jackson Walker L.L.P. No. 10-0096.

Respectfully submitted,

  
Christopher J. Rourk  
Reg. No. 39348

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Jackson Walker L.L.P.  
901 Main Street, Suite 6000  
Dallas, Texas 75202  
Telephone: (214) 953-5990  
Facsimile: (214) 661-6604  
E-mail: [crourk@jw.com](mailto:crourk@jw.com)